

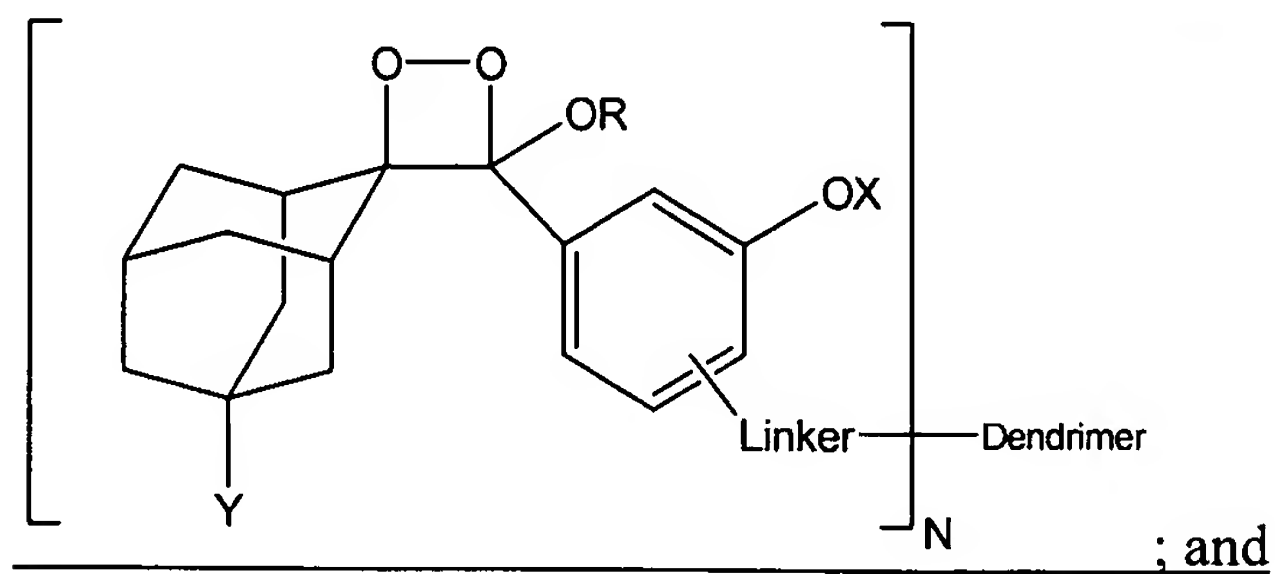
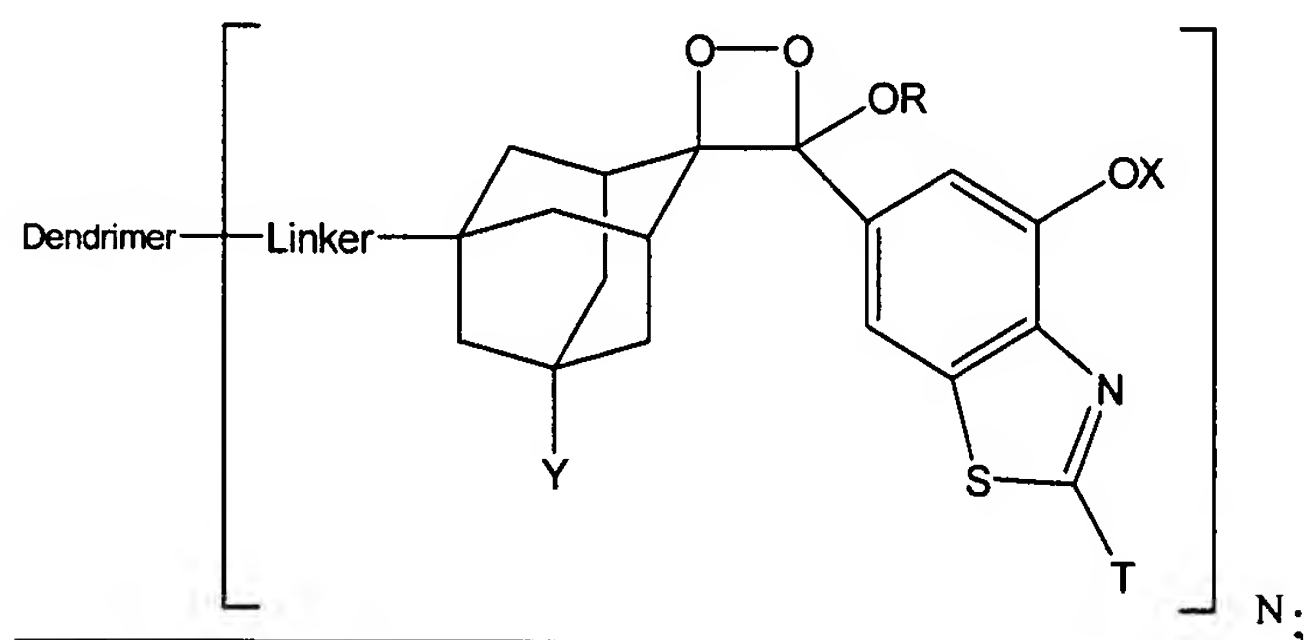
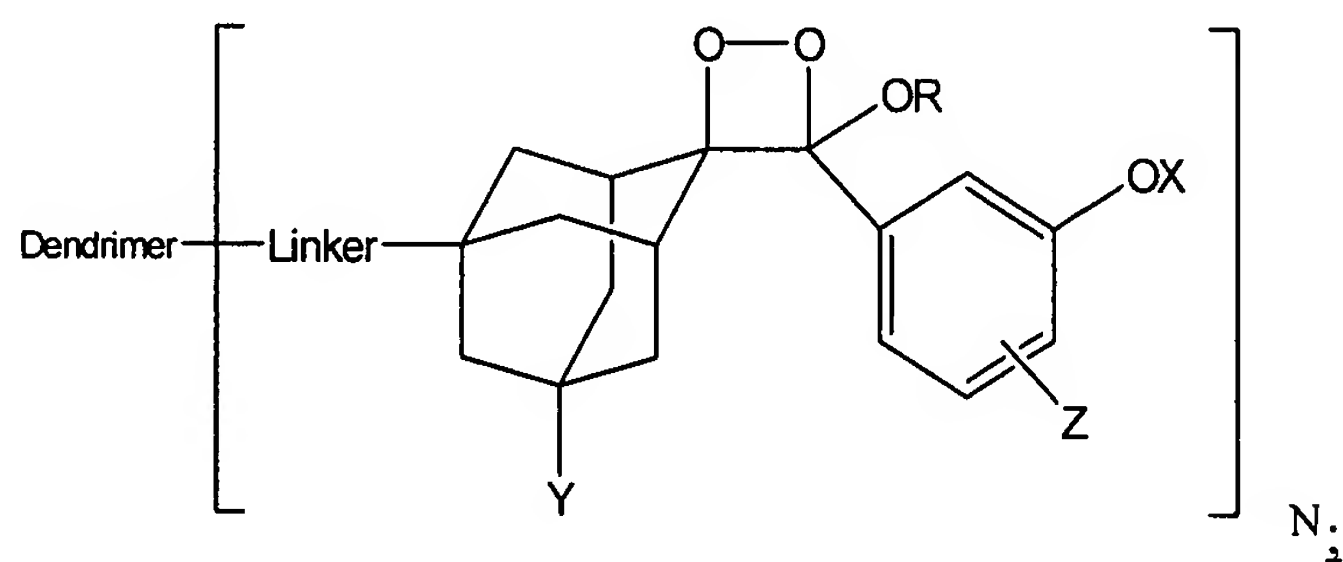
Amendments to the Claims:

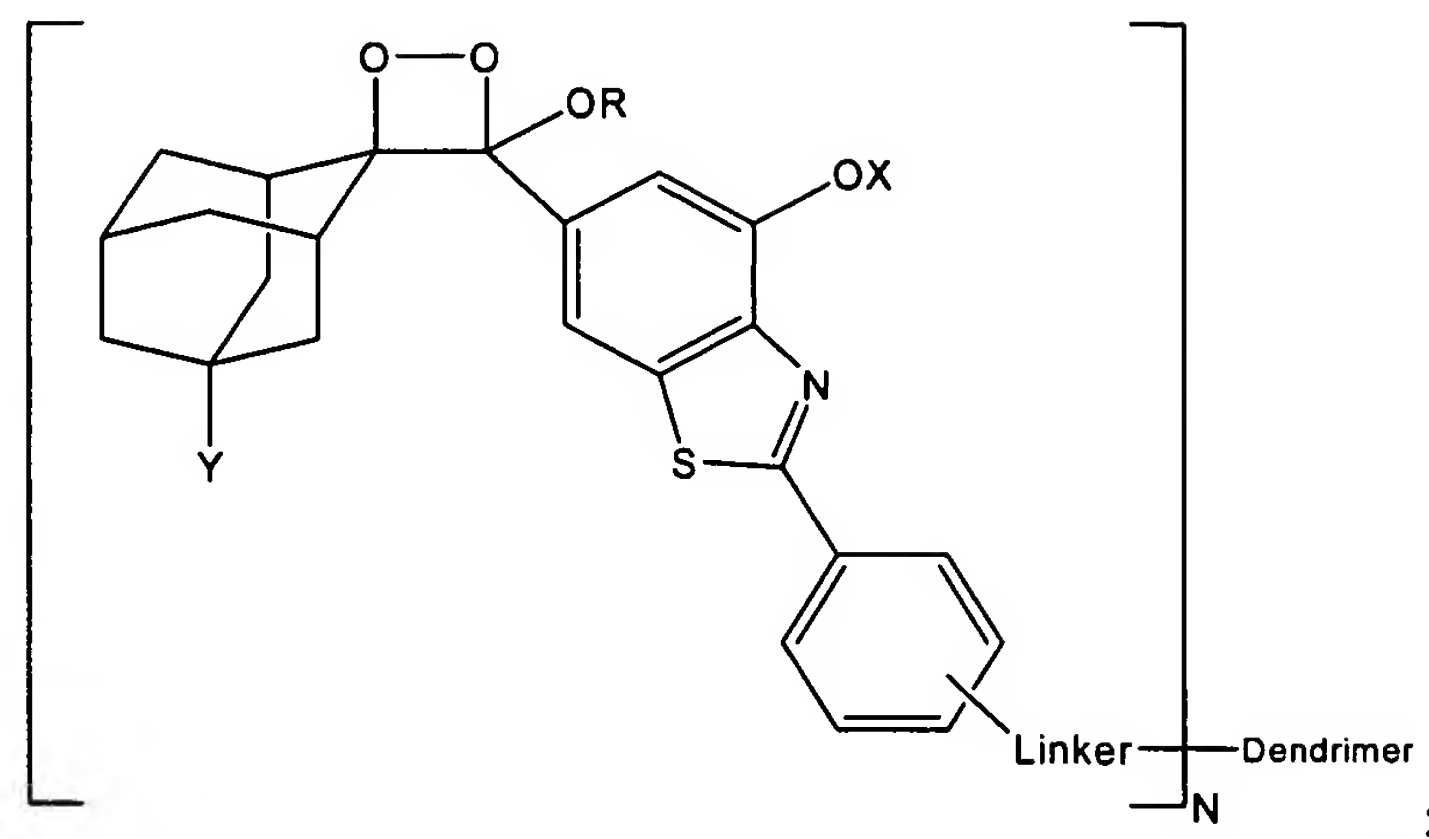
This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1.-7. (Canceled)

8. (Currently Amended) A chemiluminescent substrate delivery system, ~~wherein the chemiluminescent substrate delivery system is represented by the~~ a formula selected from the group consisting of:





wherein:

“Linker” represents a linker moiety;

“Dendrimer” represents a dendrimer moiety resulting from the reaction of a surface functional group on the dendrimer with a functional group on the linker moiety wherein said dendrimer moiety ~~bears an amount of~~ comprises chemiluminescent enhancing moieties selected from the group consisting of albumins, water soluble polymeric quaternary ammonium salts, water soluble polymeric quaternary sulfonium salts, water soluble polymeric quaternary phosphonium salts and mixtures thereof ~~effective to increase the intensity of light released by said substrate delivery systems;~~

N is a positive integer representing the number of chemiluminescent substrates conjugated to the dendrimer moiety;

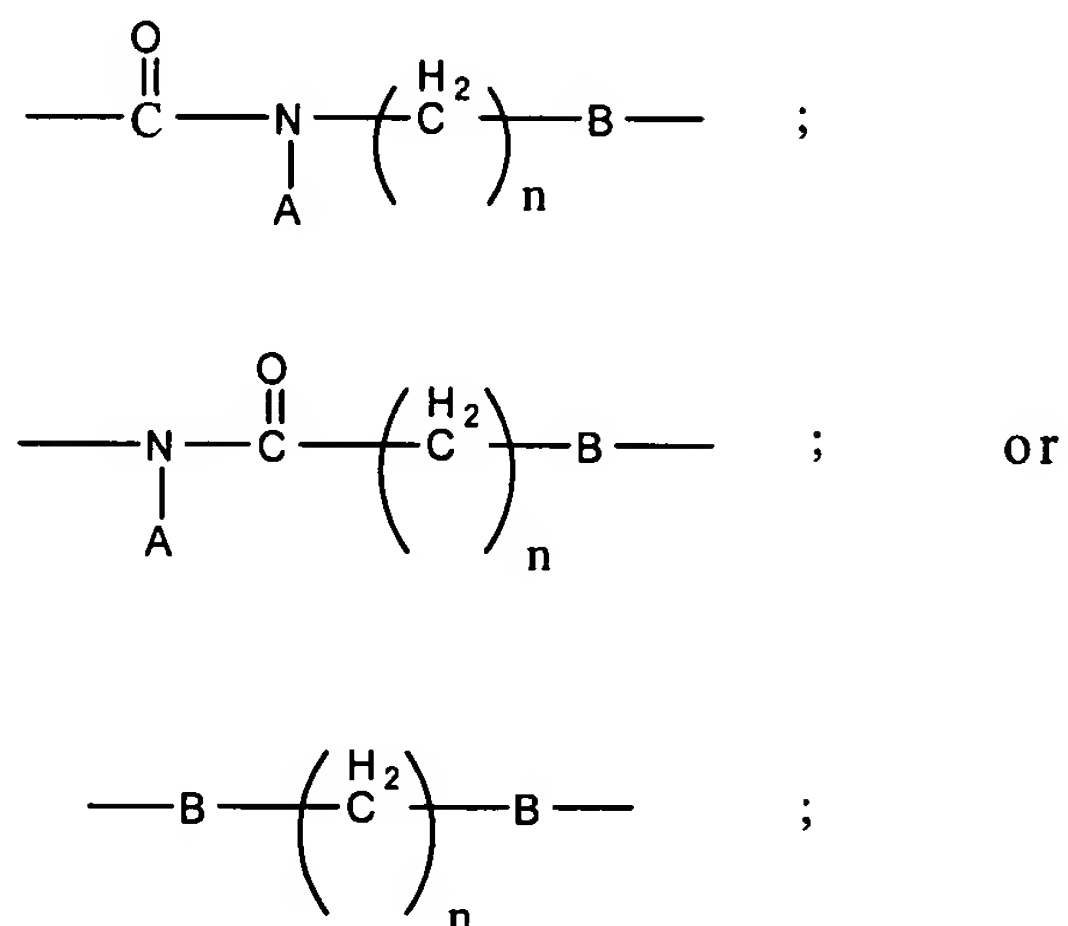
Y is H, a hydroxyl group, a halogen, an substituted alkyl group, a hydroxy substituted alkyl group, a halogen substituted alkyl group, a phenyl group, a halogenated phenyl group, an alkoxy substituted phenyl group, an alkoxy phenoxy group, a hydroxy alkoxy group, a cyano group, an amide group, an alkoxy group or a carboxyl group;

R is a C₁ - C₁₂ alkyl, mono-, di-, or trihaloalkyl, an aryl or an aralkyl;

X is an enzyme-labile group selected from the group consisting of a phosphate, galactoside, acetate, 1-phospho-2,3-diacylglyceride, 1-thio-D-glucoside, adenosine triphosphate, adenosine diphosphate, adenosine monophosphate, adenosine, α -D-glucoside, β -D-glucoside, β -D-glucuronide, β -D-mannoside, β -D-mannoside, β -D-fructofuranoside, β -glucosiduronate, 5-acetamido-3,5-dideoxy- α -D-glycero-D-galacto-2-nonulopyranoside, alkoxy derivatives of 5-acetamido-3,5-dideoxy- α -D-glycero-D-galacto-2-nonulopyranoside, p-toluenesulfonyl-L-arginine ester, and p-toluenesulfonyl-L-arginine amide; and

Z is a halo, alkoxy or alkyl group.

9. (Original) The chemiluminescent substrate delivery system of Claim 8, wherein the linker moiety is represented by the formula:



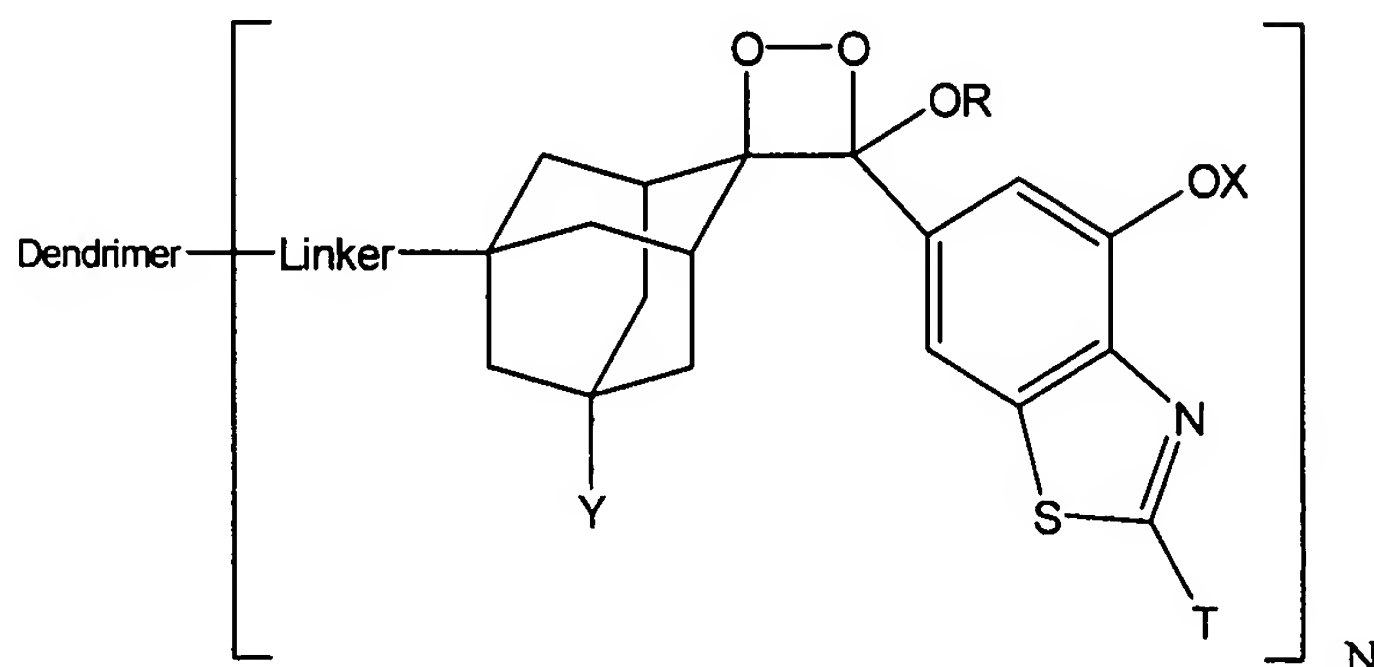
wherein:

n is a positive integer;

A is H, alkyl, trihaloalkyl or aryl and

B is independently NA, NC(O)A, O, S or CH₂.

10. (Currently Amended) The chemiluminescent substrate delivery system of Claim 8, wherein the chemiluminescent substrate delivery system is represented by the formula:



wherein:

~~"Linker" represents a linker moiety;~~

~~"Dendrimer" represents a dendrimer moiety resulting from the reaction of a surface functional group on the dendrimer with a functional group on the linker moiety;~~

~~N is a positive integer representing the number of chemiluminescent substrates conjugated to the dendrimer moiety;~~

~~Y is H, a hydroxyl group, a halogen, an unsubstituted alkyl group, a hydroxy substituted alkyl group, a halogen substituted alkyl group, a phenyl group, a halogenated phenyl group, an alkoxy substituted phenyl group, an alkoxy phenoxy group, a hydroxy alkoxy group, a cyano group, an amide group, an alkoxy group or a carboxyl group;~~

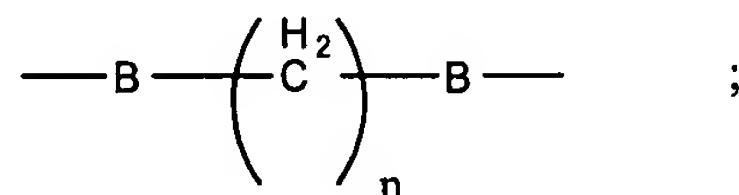
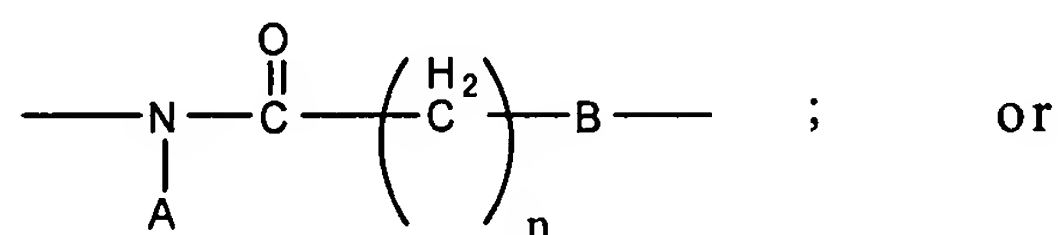
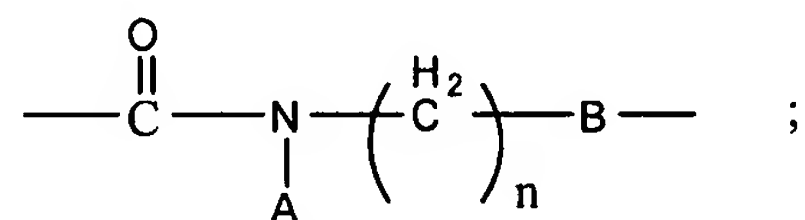
~~R is a C₄–C₁₂ alkyl, a mono-, di-, or trihaloalkyl, an aryl group or an aralkyl group; and~~

~~X is an enzyme labile group selected from the group consisting of a phosphate, galactoside, acetate, 1-phospho-2,3-diacylglyceride, 1-thio-D-glucoside, adenosine triphosphate, adenosine diphosphate, adenosine monophosphate, adenosine, α-D-~~

~~glucoside, β -D-glucoside, β -D-glucuronide, β -D-mannoside, β -D-mannoside, β -D-fructofuranoside, β -glucosiduronate, 5-acetamido-3,5-dideoxy- α -D-glycero-D-galacto-2-nonulopyranoside, alkoxy derivatives of 5-acetamido-3,5-dideoxy- α -D-glycero-D-galacto-2-nonulopyranoside, p-toluenesulfonyl-L-arginine ester, and p-toluenesulfonyl-L-arginine amide; and~~

~~T is H, an electron donating group, an electron withdrawing group, or an organic linker group which may be attached to an ancillary fluorophore or to any biological moiety.~~

11. (Original) The chemiluminescent substrate delivery system of Claim 10, wherein the linker moiety is represented by the formula:



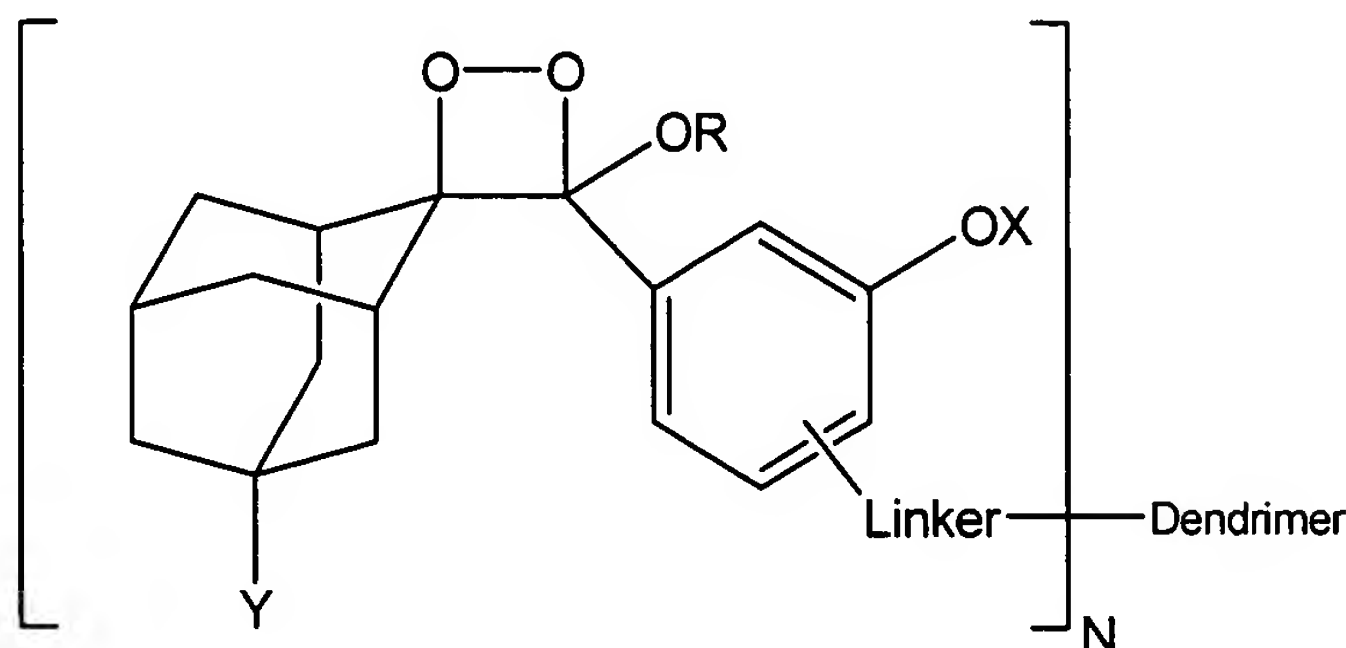
wherein:

n is a positive integer;

A is H, alkyl, trihaloalkyl or aryl; and

B is independently NA, NC(O)A, O, S or CH₂.

12. (Currently Amended) The chemiluminescent substrate delivery system of Claim 8, wherein the chemiluminescent substrate delivery system is represented by the formula:



wherein:

~~“Linker” represents a linker moiety;~~

~~“Dendrimer” represents a dendrimer moiety resulting from the reaction of a terminal functional group on the dendrimer with a functional group on the linker moiety;~~

~~N is a positive integer representing the number of chemiluminescent substrates conjugated to the dendrimer moiety;~~

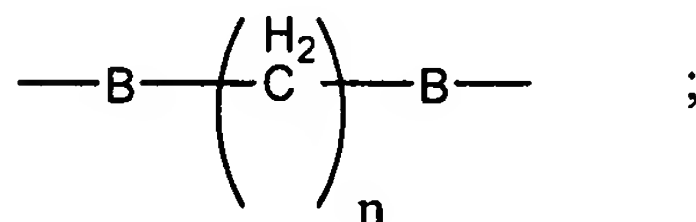
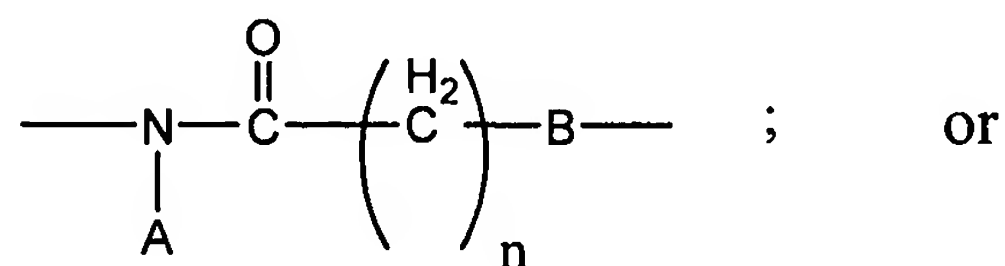
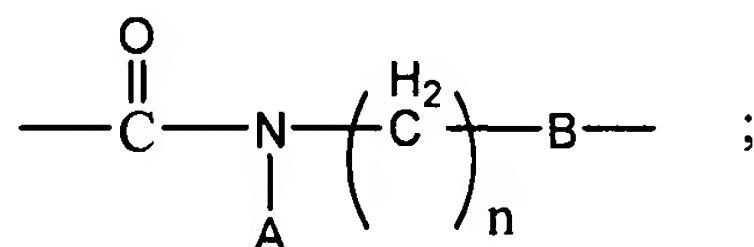
~~Y is H, a hydroxyl group, a halogen, an unsubstituted alkyl group, a hydroxy substituted alkyl group, a halogen substituted alkyl group, a phenyl group, a halogenated phenyl group, an alkoxy substituted phenyl group, an alkoxy phenoxy group, a hydroxy alkoxy group, a cyano group, an amide group, an alkoxy group or a carboxyl group;~~

~~R is a C₄–C₁₂-alkyl, mono-, di-, or trihaloalkyl, an aryl or an aralkyl; and~~

~~X is an enzyme labile group selected from the group consisting of a phosphate, galactoside, acetate, 1-phospho-2,3-diacylglyceride, 1-thio-D-glucoside, adenosine triphosphate, adenosine diphosphate, adenosine monophosphate, adenosine, α-D-glucoside, β-D-glucoside, β-D-glucuronide, β-D-mannoside, β-D-mannoside, β-D-~~

~~fructofuranoside, β -glucosiduronate, 5-acetamido-3,5-dideoxy- α -D-glycero-D-galacto-2-nonulopyranoside, alkoxy derivatives of 5-acetamido-3,5-dideoxy- α -D-glycero-D-galacto-2-nonulopyranoside, p-toluenesulfonyl-L-arginine ester, and p-toluenesulfonyl-L-arginine amide.~~

13. (Original) The chemiluminescent substrate delivery system of Claim 12, wherein the linker moiety is represented by the formula:



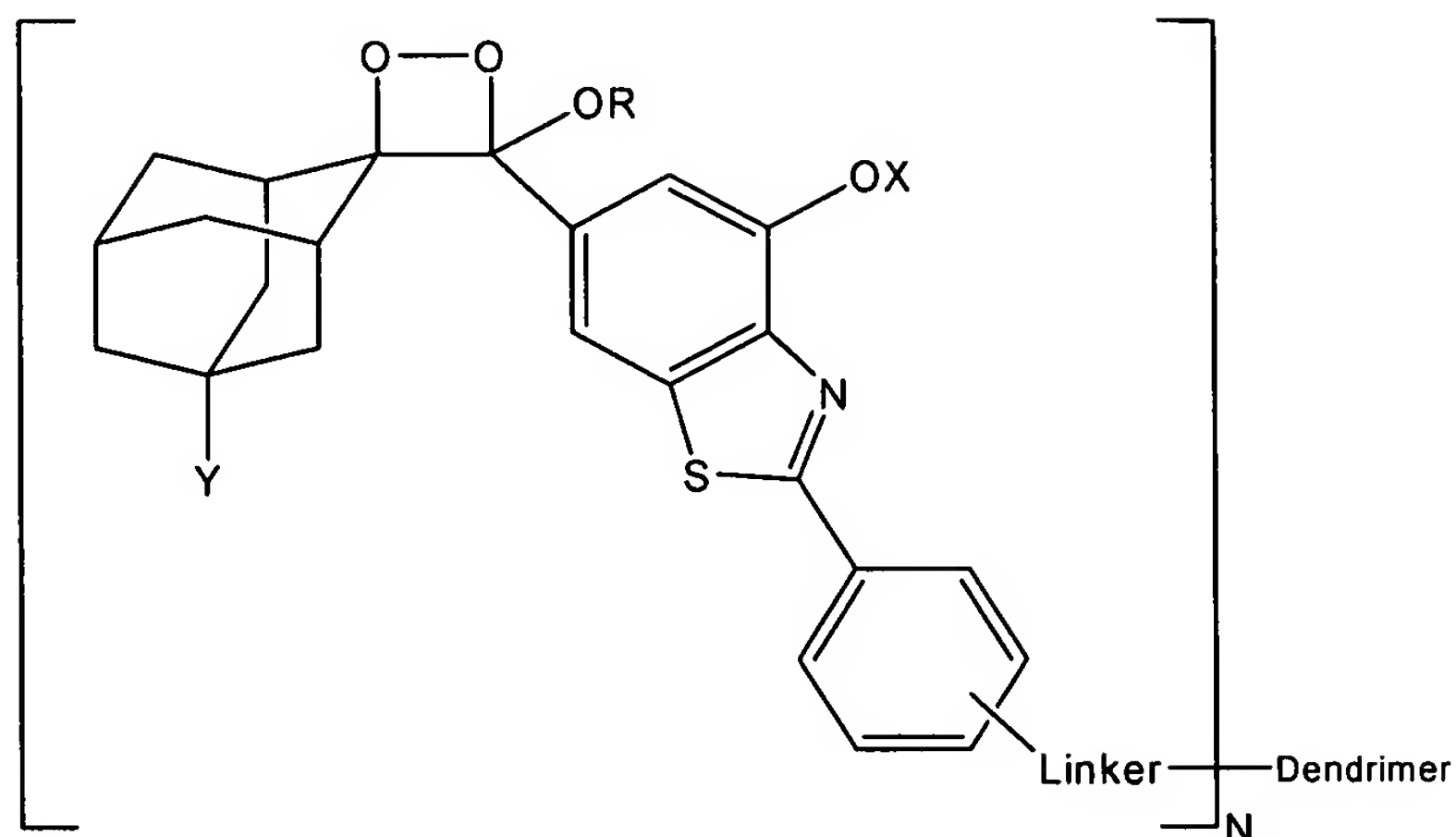
wherein:

n is a positive integer;

A is H, alkyl, trihaloalkyl or aryl; and

B is independently NA, NC(O)A, O, S or CH₂.

14. (Currently Amended) The chemiluminescent substrate delivery system of Claim 8, wherein the chemiluminescent substrate delivery system is represented by the formula:



wherein:

“Linker” represents a linker moiety;

“Dendrimer” represents a dendrimer moiety resulting from the reaction of a terminal functional group on the dendrimer with a functional group on the linker moiety;

N is a positive integer representing the number of chemiluminescent substrates conjugated to the dendrimer moiety;

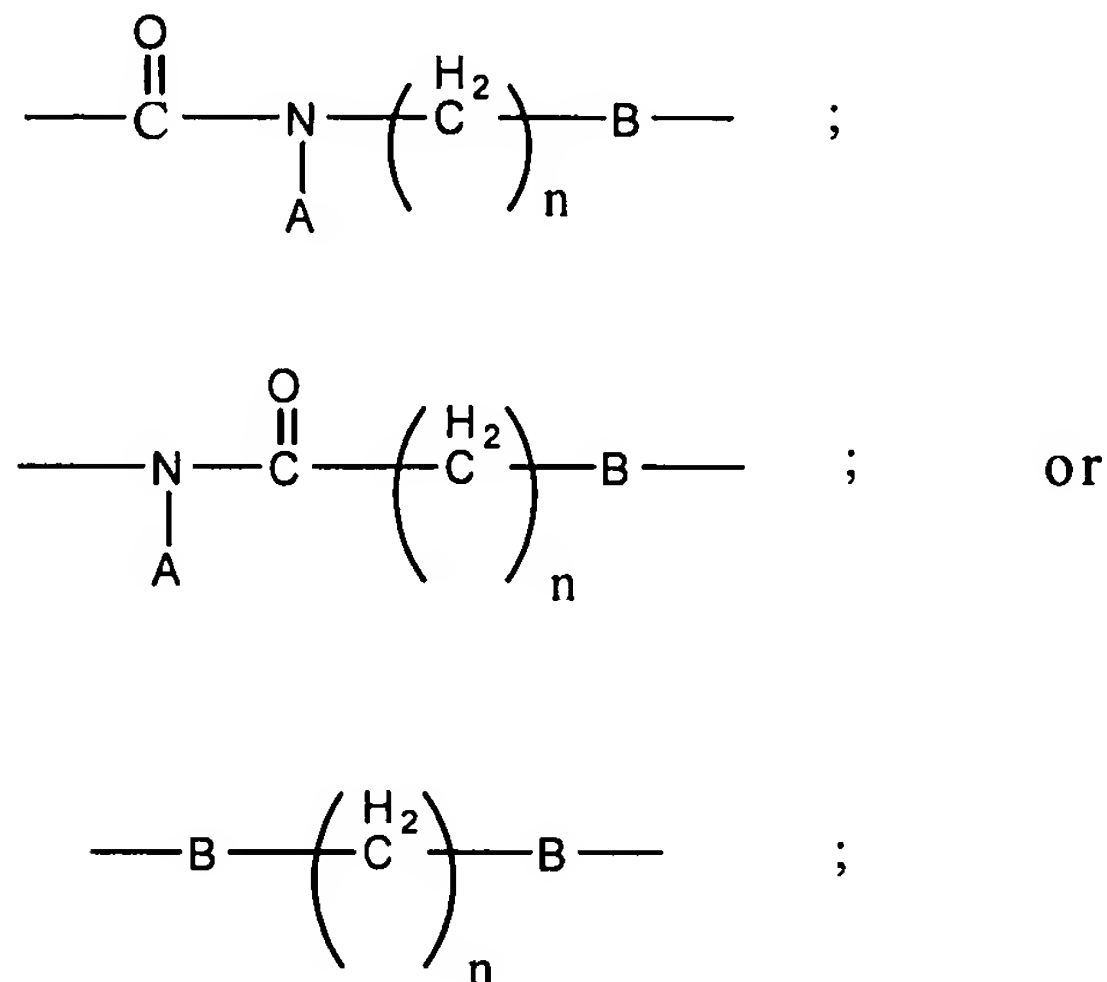
Y is H, a hydroxyl group, a halogen, an unsubstituted alkyl group, a hydroxy substituted alkyl group, a halogen substituted alkyl group, a phenyl group, a halogenated phenyl group, an alkoxy substituted phenyl group, an alkoxy phenoxy group, a hydroxy alkoxy group, a cyano group, an amide group, an alkoxy group or a carboxyl group;

R is a C₄–C₁₂ alkyl, mono-, di-, or trihaloalkyl, an aryl or an aralkyl; and

X is an enzyme labile group selected from the group consisting of a phosphate, galactoside, acetate, 1-phospho-2,3-diacylglyceride, 1-thio-D-glucoside, adenosine triphosphate, adenosine diphosphate, adenosine monophosphate, adenosine, α-D-glucoside, β-D-glucoside, β-D-glucuronide, β-D-mannoside, β-D-mannoside, β-D-fructofuranoside, β-glucosiduronate, 5-acetamido-3,5-dideoxy-α-D-glycero-D-galacto-2-

~~nonulopyranoside, alkoxy derivatives of 5-acetamido-3,5-dideoxy- α -D-glycero-D-galacto-2-nonulopyranoside, p-toluenesulfonyl-L-arginine ester, and p-toluenesulfonyl-L-arginine amide.~~

15. (Original) The chemiluminescent substrate delivery system of Claim 14, wherein the linker moiety is represented by the formula:



wherein:

n is a positive integer;

A is H, alkyl, trihaloalkyl or aryl; and

B is independently NA, NC(O)A, O, S or CH₂.

16. – 52. (Canceled)

53. (New) The chemiluminescent substrate delivery system of Claim 8, wherein the chemiluminescent enhancing moieties are formed by coupling a chemiluminescent enhancing molecule to a reactive site on the dendrimer or by chemically modifying a reactive site on the dendrimer to an enhancing moiety.

54. (New) The chemiluminescent substrate delivery system of Claim 8, wherein the chemiluminescent enhancing moieties are formed by peralkylation of amino groups

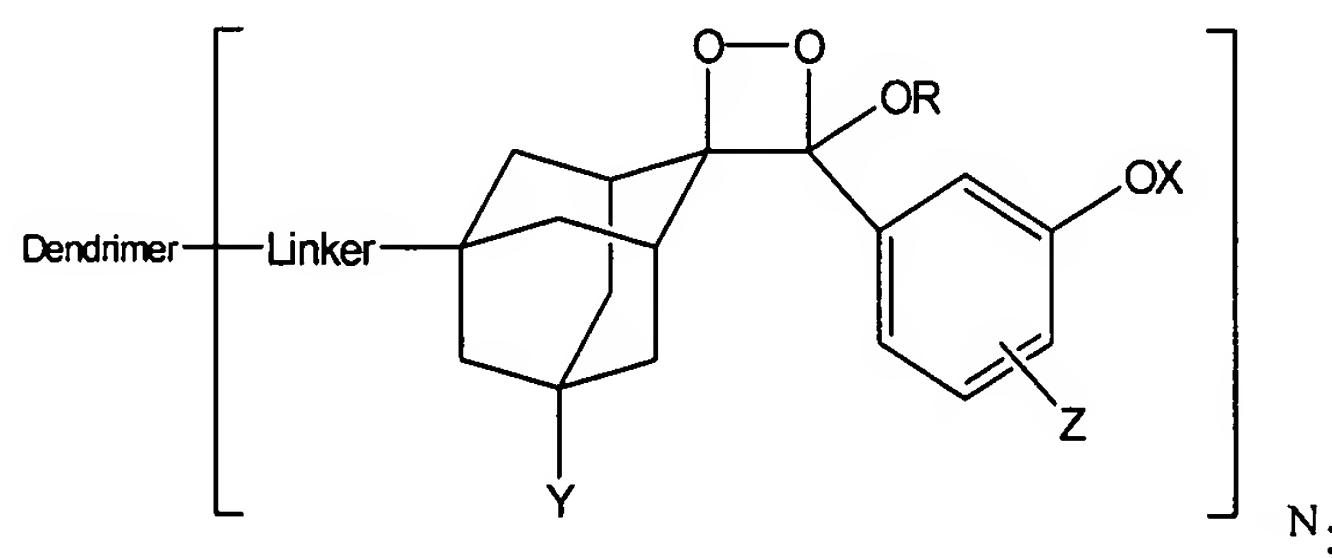
on the dendrimer or by peralkylcarbonylation of amino groups on the dendrimer by alkylation of amide groups on the dendrimer.

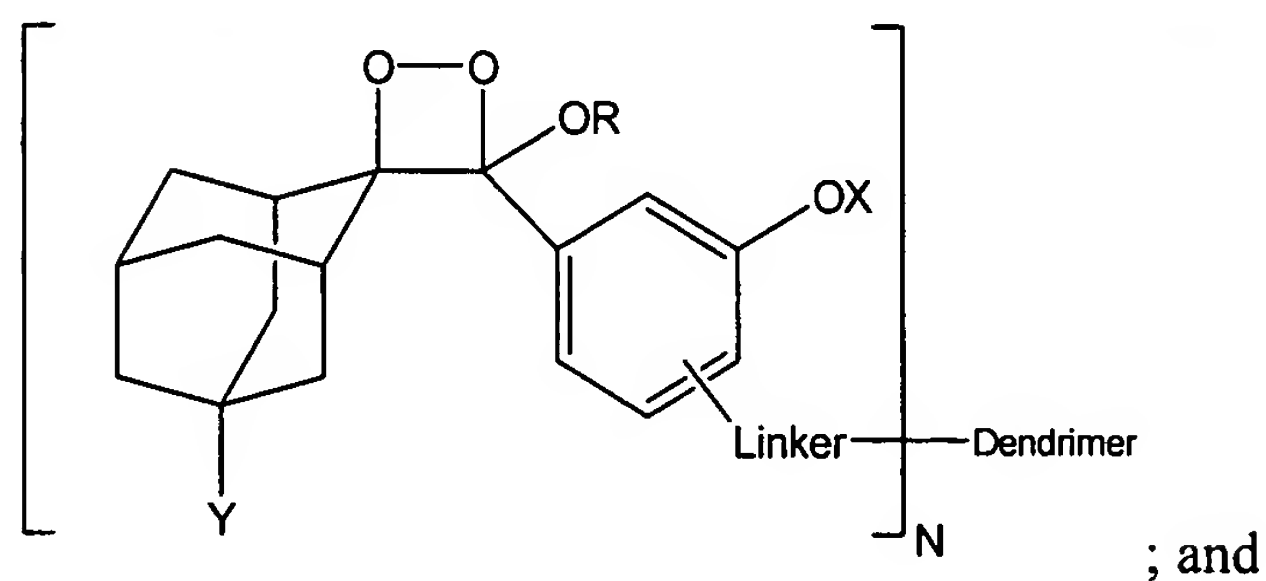
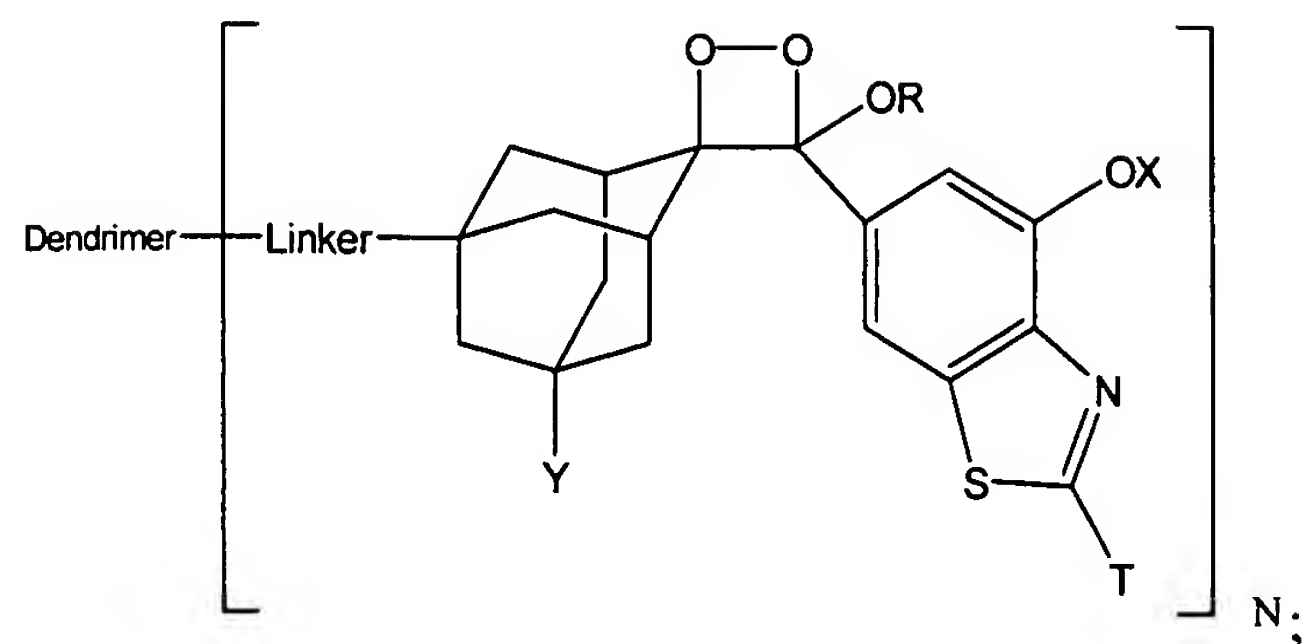
55. (New) The chemiluminescent substrate delivery system of Claim 8, wherein the chemiluminescent enhancing moieties are formed by reaction of carboxylate groups on the dendrimer with an amino linked ammonium, phosphonium or sulfonium salt.

56. (New) The chemiluminescent substrate delivery system of Claim 8, wherein the chemiluminescent substrate and/or the dendrimer comprises one or more water solubilizing groups.

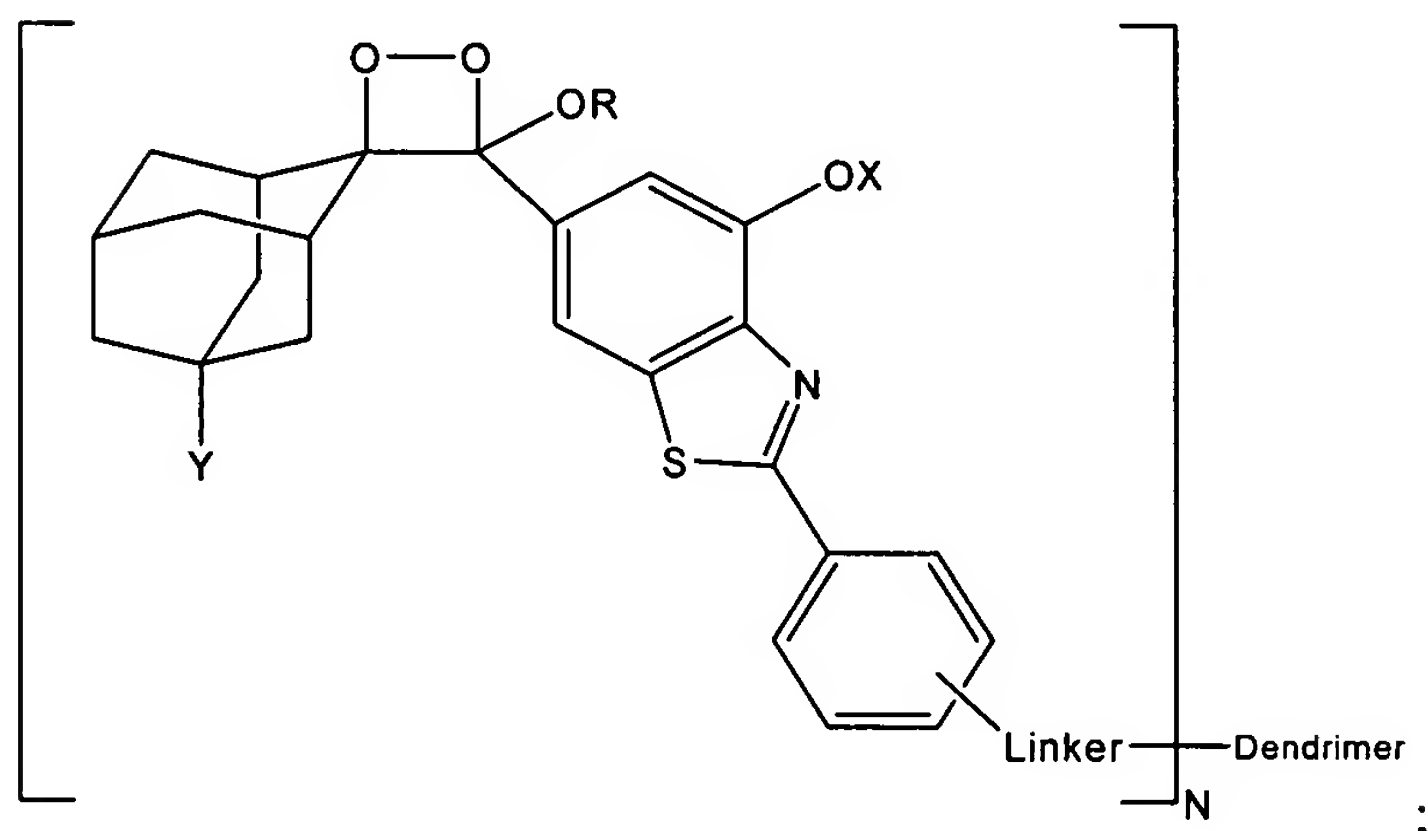
57. (New) The chemiluminescent substrate delivery system of Claim 56, wherein the one or more water solubilizing groups are selected from the group consisting of carboxylic acids, esters, alkyl-oxides, aryl-oxides, alkyl-amides, aryl-amides, aralkyl-amides, alkyl-urethanes, aryl-urethanes, alkyl-sulfonamides, aryl-sulfonamides, alkyl-sulfonic acids, aryl-sulfonic acids, quaternary ammonium salts, and combinations thereof.

58. (New) A chemiluminescent substrate delivery system comprising a first dendrimer represented by a formula selected from the group consisting of:





; and



;

wherein:

"Linker" represents a linker moiety;

"Dendrimer" represents a dendrimer moiety resulting from the reaction of a surface functional group on the dendrimer with a functional group on the linker moiety;

N is a positive integer representing the number of chemiluminescent substrates conjugated to the dendrimer moiety;

Y is H, a hydroxyl group, a halogen, an substituted alkyl group, a hydroxy substituted alkyl group, a halogen substituted alkyl group, a phenyl group, a halogenated phenyl group, an alkoxy substituted phenyl group, an alkoxy phenoxy group, a hydroxy alkoxy group, a cyano group, an amide group, an alkoxy group or a carboxyl group;

R is a C₁ - C₁₂ alkyl, mono-, di-, or trihaloalkyl, an aryl or an aralkyl;

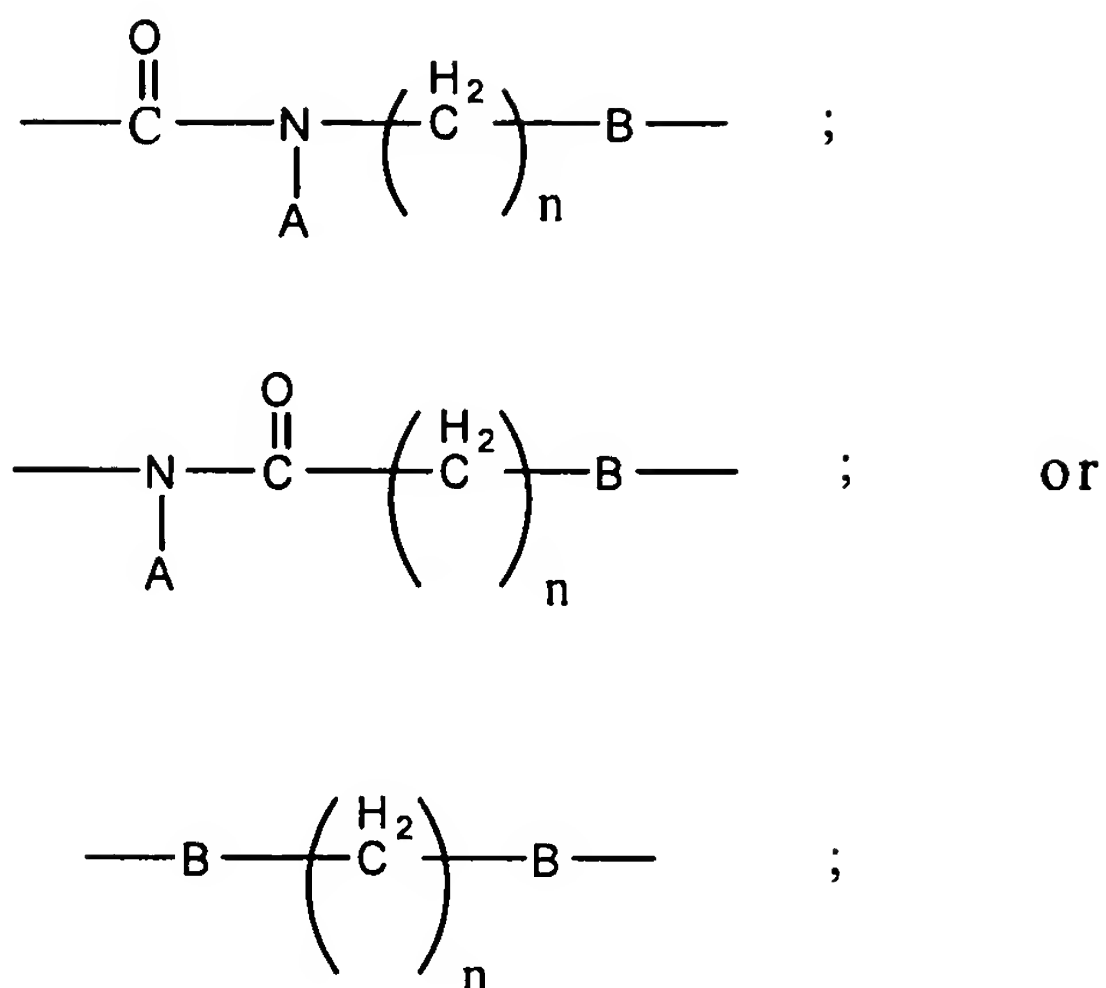
X is an enzyme-labile group selected from the group consisting of a phosphate, galactoside, acetate, 1-phospho-2,3-diacylglyceride, 1-thio-D-glucoside, adenosine triphosphate, adenosine diphosphate, adenosine monophosphate, adenosine, α -D-glucoside, β -D-glucoside, β -D-glucuronide, β -D-mannoside, β -D-mannoside, β -D-fructofuranoside, β -glucosiduronate, 5-acetamido-3,5-dideoxy- α -D-glycero-D-galacto-2-nonulopyranoside, alkoxy derivatives of 5-acetamido-3,5-dideoxy- α -D-glycero-D-galacto-2-nonulopyranoside, p-toluenesulfonyl-L-arginine ester, and p-toluenesulfonyl-L-arginine amide; and

Z is a halo, alkoxy or alkyl group. The chemiluminescent substrate delivery system of Claim 1, further comprising a second dendrimer, wherein the second dendrimer comprises a chemiluminescence enhancer moiety and wherein the second dendrimer is covalently or ionically associated with the dendrimer conjugated to the at least one enzymatically active chemiluminescent substrate moiety; and

a second dendrimer comprising chemiluminescent enhancing moieties;

wherein the second dendrimer is covalently or ionically associated with the first dendrimer.

59. (New) The chemiluminescent substrate delivery system of Claim 58, wherein the linker moiety is represented by the formula:



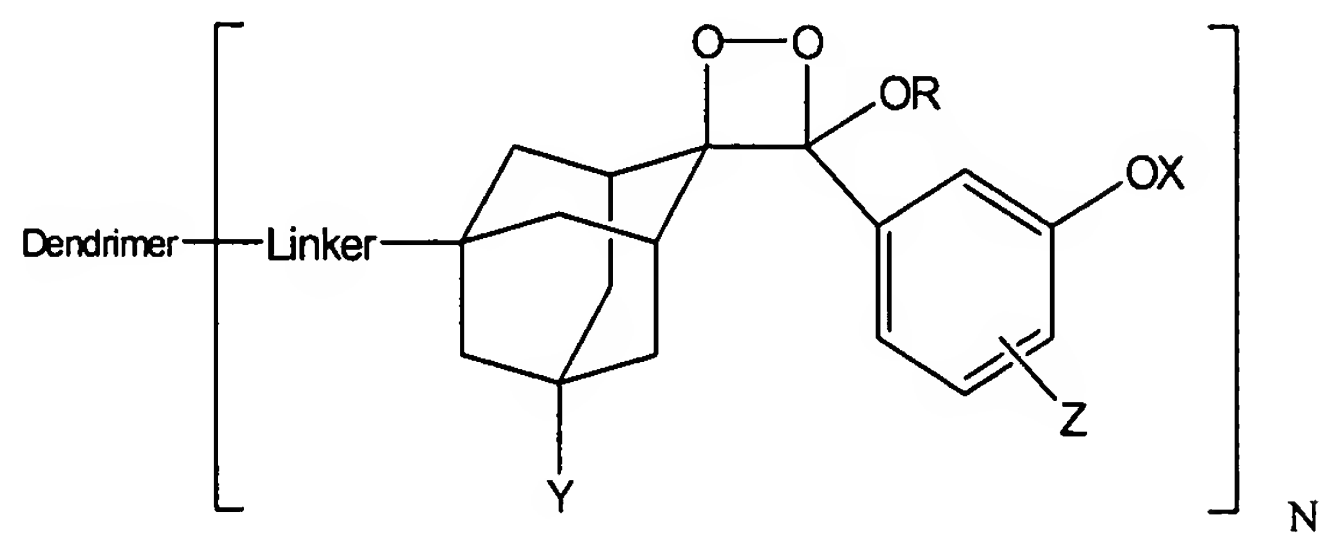
wherein:

n is a positive integer;

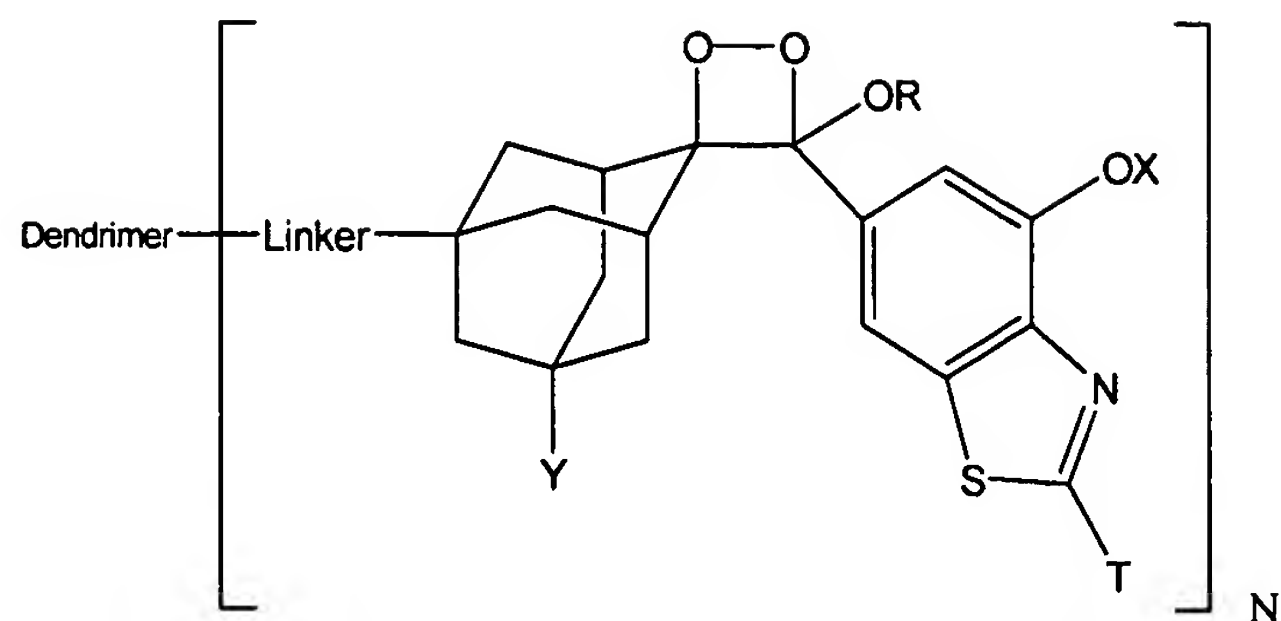
A is H, alkyl, trihaloalkyl or aryl; and

B is independently NA, NC(O)A, O, S or CH₂.

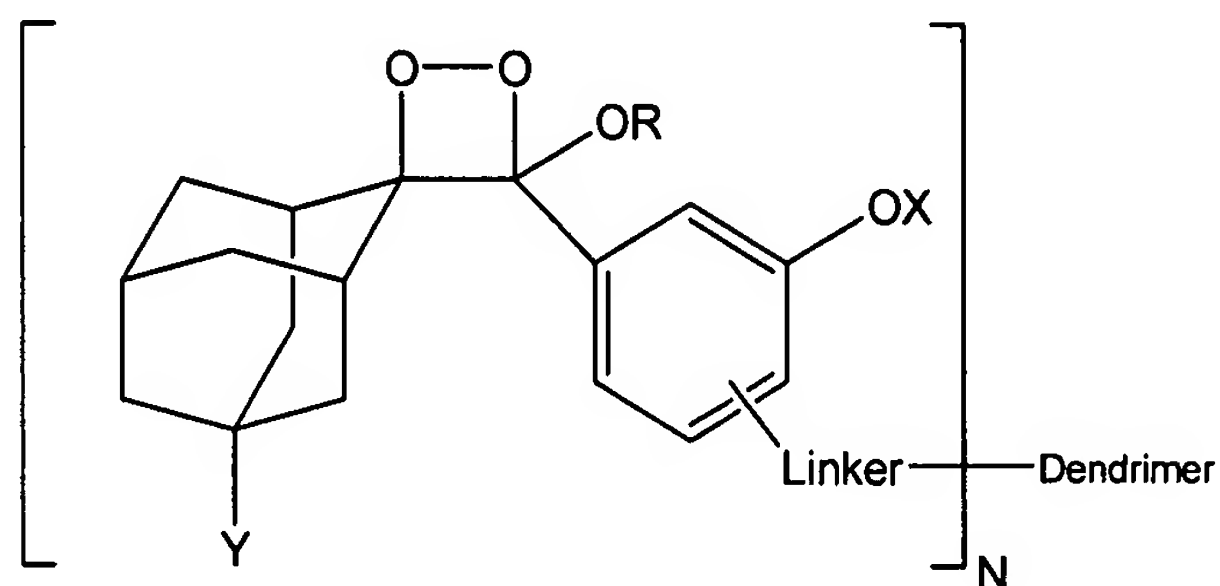
60. (New) The chemiluminescent substrate delivery system of Claim 58, wherein the first dendrimer has a structure represented by the formula:



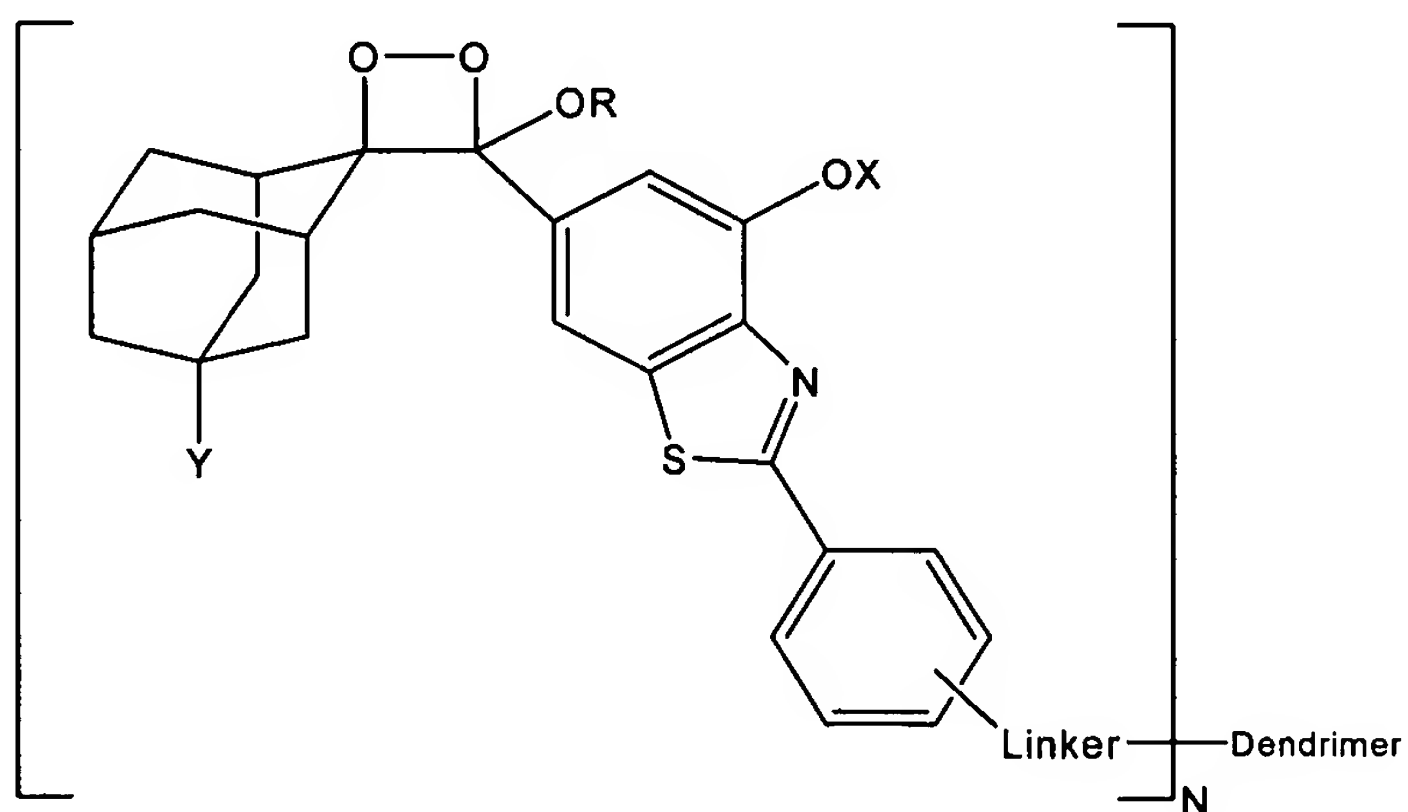
61. (New) The chemiluminescent substrate delivery system of Claim 58, wherein the first dendrimer has a structure represented by the formula:



62. (New) The chemiluminescent substrate delivery system of Claim 58, wherein the first dendrimer has a structure represented by the formula:



63. (New) The chemiluminescent substrate delivery system of Claim 58, wherein the first dendrimer has a structure represented by the formula:



64. (New) The chemiluminescent substrate delivery system of Claim 58, wherein the chemiluminescent enhancing moieties are formed by coupling a chemiluminescent enhancing molecule to a reactive site on the second dendrimer or by chemically modifying a reactive site on the second dendrimer to an enhancing moiety.